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TITLE: PHOTOGRAPH LOCATION STAMP

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PHOTOGRAPH LOCATION STAMP

BACKGROUND OF THE INVENTION

The present invention relates to a feature for a camera that adds an identification mark to a photograph to indicate the location where the photograph was taken.

Improvements in photography have enabled various kinds of information to be associated with pictures. For example, a time and/or date stamp can be associated with a photograph. The time or date stamp may appear on the actual print of the photograph image or may be associated with a data file of the photograph image. Other improvements allow users to add labels or text to photos. These labels or text may appear in the actual print of the photograph image or may be associated with the data file of the photograph image. Another improvement allows location data to be associated with photographs. The location data may indicate where a photograph was taken. The location where a photograph was taken may be determined using positioning equipment, such as a GPS unit. A GPS unit associated with a camera indicates an absolute global position, i.e., geographic coordinates, such as latitude and longitude. This type of information is very useful. However there exists room for improvements.

Accordingly, it is an objective to provide a way to indicate a location associated with a photograph that is meaningful to the user.

SUMMARY OF THE INVENTION

To address these and other objectives, the present invention includes a feature for a camera that associates meaningful information with a photograph to indicate where the photograph was taken. The camera includes equipment that determines a physical position associated with an image. An application uses geographic data to determine a municipality, or other administrative or governmental area, in which the physical position

1 is located and associates data indicating the municipality, or other administrative or
2 governmental area, with the image.

3

4 BRIEF DESCRIPTION OF THE DRAWINGS

5 Figure 1 is a block diagram showing a camera according to a first embodiment.

6 Figure 2 is a flow chart showing a process performed by the embodiment of
7 Figure 1.

8 Figure 3 is an illustration of a photograph produced with the embodiment of
9 Figure 1, showing a location stamp on the photograph.

10 Figure 4 is an illustration of another photograph produced with the embodiment of
11 Figure 1.

12 Figure 5 is a block diagram showing an alternative embodiment.

13 Figure 6 is a block diagram showing another alternative embodiment.

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15 DETAILED DESCRIPTION OF THE 16 PRESENTLY PREFERRED EMBODIMENTS

17 Figure 1 is a block diagram showing components of a camera 10 that incorporates
18 a first disclosed embodiment. The camera 10 includes a housing 12. Located in the
19 housing 12 is an image acquiring means 14. The image acquiring means 14 incorporates
20 any current or future technology for acquiring and saving visual images (or data versions
21 thereof) of observable views on a media. The image acquiring means 14 may acquire and
22 save the visual images in analog or digital form. If digital form is used, any suitable
23 format, such as *.jpg, *.bmp, or *.png, may be used. Other formats may also be used.
24 The media on which the visual images (or data versions thereof) are stored may include
25 flash cards, film, disks, and so forth.

26 The camera 10 includes a component 20 that determines the position of the
27 camera 10. In one embodiment, the position determining component 20 is a GPS unit.
28 Alternatively, the position determining component 20 is implemented using other
29 technology. Such alternatives include DGPS, LORAN, inertial sensors, cell phone
30 positioning equipment (whereby the location of a cell phone can be determined remotely

1 using signal triangulation, signal time-of-arrival, etc.) and so on. Combinations of
2 different technologies may also be used. The position determining component 20 may
3 use (or rely on) equipment or components located outside the camera housing 12. For
4 example, in the case of a GPS unit, the position determining component 20 relies on
5 signals from GPS satellites.

6 In this embodiment, the camera 10 includes a location stamp program or
7 application 28. The location stamp program 28 associates data that indicate an
8 administrative (or governmental) area or place with images (or data versions thereof)
9 acquired by the camera. The camera 10 includes suitable hardware and software to
10 execute the location stamp program 28. For example, the camera 10 includes a suitable
11 processor, memory, data storage, operating system, user interface and power supply.

12 The location stamp program 28 uses a geographic database 36. The geographic
13 database 36 is stored on a suitable media, such as a ROM, flash memory card, etc. In one
14 embodiment, the geographic database 36 is located with the camera 10, i.e., located in the
15 camera housing 12. The geographic database 36 includes information about
16 administrative (or governmental) areas or places, such as municipalities, including cities,
17 towns, villages, etc. In one embodiment, the geographic database 36 includes
18 information about the positions of the administrative (or governmental) areas or places.
19 The information in the geographic database 36 may include the geographic locations
20 (e.g., coordinates) of the administrative (or governmental) areas or places or boundaries
21 thereof. The geographic database may also include information about other hierarchical
22 layers of administrative (or governmental) areas or places, such as states, provinces,
23 counties, countries, etc.

24 As stated above, the location stamp program 28 associates data that indicate an
25 administrative (or governmental) area or place with images (or data versions thereof)
26 acquired by the camera. Figure 2 illustrates a process 50 performed by the camera 10.

27 The camera is operated to take a picture (Step 56 in Figure 2). When the camera
28 is operated to take a picture, the location stamp program 28 is executed. The location
29 stamp program 28 receives data from the position determining component 20 that
30 indicates the position of the camera when the picture is being taken (Step 60). The

1 location stamp program 28 accesses the geographic database 36 and determines which
2 municipality the camera is located in (Step 62). The location stamp program 28
3 associates information indicating the municipality with the picture (Step 64). In one
4 embodiment, the location stamp program 28 adds text indicating the municipality to the
5 picture image. The location stamp program 28 stores the photographic image with the
6 data indicating the location (Step 66). Optionally, the photographic image with the data
7 indicating the location is printed (Step 68).

8 Figure 3 shows an example of a picture produced by the embodiment of Figures 1
9 and 2. In Figure 3, a picture 70 of Chicago, Illinois, has text 72 indicating "CHICAGO,
10 IL" overlaid on the image.

11 Figure 4 shows another example of a picture produced by the embodiment of
12 Figures 1 and 2. In Figure 4, a picture 80 of Paris, France, has text 82 indicating
13 "PARIS, FRANCE" overlaid on the image.

14 An advantage of the present embodiment is that meaningful information is added
15 to pictures taken by cameras. The information indicates the place (e.g., where a picture
16 was taken). This kind of information may be more meaningful than geographic
17 coordinates.

18

19 Alternative embodiments with remote geographic databases

20 In alternative embodiments, the geographic database used to determine the
21 location stamp to associate with a photograph may be located remotely from the camera.
22 Figures 5 and 6 show alternative embodiments that use geographic databases located
23 remotely from cameras that provide location stamp features. (In Figures 5 and 6
24 components labeled with the same numbers as in previous figures are similar or identical
25 to those previously described components.)

26 Figure 5 shows a camera 10, which is similar to the camera described in the
27 previous embodiments. In the embodiment of Figure 5, the camera 10 does not have a
28 geographic database located with the camera. With the embodiment of Figure 5, a user
29 operates the camera 10 to take pictures, as described in the previous embodiment. When
30 the camera 10 is operated to take a picture, a position determining component 20

1 determines a position of the camera 10. The position determining component 20 may be
2 a GPS unit and the position determined by the GPS unit may indicate the position of the
3 camera in geographic coordinates. A location stamp application 128 associates data
4 indicating the position determined by the position determining component 20 with a data
5 file of the picture. At this stage, the location stamp application 128 does not actually add
6 the data indicating the position (i.e., which expresses the position as geographic
7 coordinates) to the picture image, but maintains information that indicates the
8 relationship between the position and the picture image.

9 At a later time, the user connects the camera 10 to a computing platform 130.
10 (Any suitable connection means may be used, such as a USB connection or a wireless
11 connection.) The computing platform 130 may be a general purpose computing device,
12 such as a personal computer or a PDA. The computing platform 130 is connected to a
13 data network 138, such as the Internet. When the camera 10 is connected to the
14 computing device 130, a corresponding location stamp application 144 is run. The
15 corresponding location stamp application 144 communicates with the camera 10 and
16 obtains the data indicating the positions associated with each of the pictures taken by the
17 camera. Then, the corresponding location stamp application 144 transmits a message 148
18 from the computing platform 130 over the network 138 to a map service server 150. The
19 message 148 includes the data indicating the positions of all the pictures taken by the
20 camera. The message 148 requests the map service server 150 to indicate the
21 municipalities (or other administrative or governmental areas) associated with each of the
22 positions.

23 The map service server 150 includes the hardware and software necessary to send
24 and receive requests automatically over the data network 138. The map service server
25 150 also includes a geocoding application 160. The geocoding application 160 uses a
26 geographic database 36 to determine the municipalities (or other administrative or
27 governmental areas) associated with each of the positions. After determining the
28 municipalities (or other administrative or governmental areas) associated with each of the
29 positions, the map service server 150 sends a message including this information back to
30 the computing platform 130.

1 On the computing platform 130, the corresponding location stamp application 144
2 communicates the information received from the map service server 150 back to the
3 camera 10. On the camera 10, the location stamp application 128 associates the
4 respective text data indicating each municipality (or other administrative or governmental
5 area) with each of the corresponding images.

6 In an alternative version of this embodiment, the pictures with the position data
7 (in geographic coordinates) are transferred from the camera to the computing platform.
8 Then, when the data indicating the municipalities is transferred back to the computing
9 platform, the municipality data is associated with the images on the computing platform,
10 instead of on the camera.

11 Figure 6 shows another embodiment in which the geographic database used to
12 determine the municipalities associated with photographs is located remotely from the
13 camera. In Figure 6, a wireless phone 200 includes a camera 214 as a feature. The
14 camera 214 in the wireless phone 200 may be similar to the cameras 10 described in the
15 previous embodiments. With the embodiment of Figure 6, a user operates the camera
16 feature of the phone 200 to take a picture. When the camera in the phone 200 is operated
17 to take a picture, a position determining component 20 in the phone 200 determines a
18 position of the phone 200. As in the previous embodiments, the position determining
19 component 20 may be a GPS unit and the position determined by the GPS unit may
20 indicate the position in geographic coordinates. A location stamp application 228 in the
21 phone 200 uses the communications features 230 of the phone 200 to communicate with
22 a map service server 150. Communications between the phone 200 and the map services
23 server 150 may use any suitable communications network 238. The location stamp
24 application 228 in the phone requests the map service server 150 to indicate the
25 municipality (or other administrative or governmental areas) associated with the position
26 determined by the positioning determining component 20.

27 The map service server 150 uses a geocoding application 160 to determine the
28 municipality (or other administrative or governmental area) associated with the position
29 and provides this information back to the phone 200 where the information is associated
30 (as text) with the image.

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2 Additional alternatives and features

3 In one alternative embodiment, if the camera has an image preview feature, the
4 location stamp may be shown on the preview image.

5 In another alternative embodiment, a camera having the location stamp feature
6 provides the option to turn the location stamp on and off, as desired. The camera
7 provides an appropriate selection option in the user interface of the camera for this
8 purpose.

9 According to another alternative, the camera allows the user to determine where
10 on a photographic image the location stamp appears. For example, the location stamp
11 may appear by default in the lower right corner, but the user may be provided the option
12 to have the location stamp in any other location in the image.

13 In one embodiment, the location stamp text is added (by the location stamp
14 program) to the image of the picture and then the image with the added text is stored as
15 an image. (In other words, the added location stamp text becomes part of the stored data
16 image.) In an alternative embodiment, the location stamp text is not added as text in the
17 image of the picture, but instead is associated with the data of the image. This
18 association may be made by the location stamp program using known data linking or
19 storage techniques. This latter embodiment allows the photographic image to be shown
20 (i.e., displayed, printed) at a later time with the location stamp removed, if desired.

21 According to another embodiment, if the camera is located outside a municipality,
22 the location stamp may indicate the state, province or country instead.

23 The location stamp is not limited to identifying the municipality in which a
24 picture is taken. The location stamp may be used to identify other areas, such as well
25 known places like the Grand Canyon, the Pyramids, etc.

26 In another alternative embodiment, the location stamp feature may include major
27 landmarks located in or near municipalities. For these municipalities, a user of a camera
28 with the location stamp feature will have the option to choose a location stamp for a
29 photograph that identifies a specific landmark instead of (or in addition to) a location
30 stamp that identifies the municipality. For example, a user of camera with the location

1 stamp feature who takes a photograph near the Washington Monument in Washington
2 DC will be provided the option to have text added to the photograph that indicates
3 "WASHINGTON DC" or "WASHINGTON MONUMENT" or both. To support this
4 function, the geographic database used by a camera includes data that indicates the
5 locations of certain landmarks within or near municipalities. When the position (i.e.,
6 coordinates) associated with a photograph is within an observable view of a landmark,
7 the user is provided the option to have text indicating either the landmark, or the
8 municipality, or both, associated with the photograph. (In the case where more than one
9 landmark may be observable from a given location, the user may be requested to choose
10 the text for one landmark from all the possible landmarks to associate with a photograph.)

11 The geographic database used by the camera may be updatable or non-updatable.
12 If the geographic database is updatable, it may be updated by replacing the entire
13 geographic database including the media on which it is stored with a new geographic
14 database. Alternatively, if the geographic database is stored on a re-writable media, the
15 old geographic database may be overwritten with a newer version.

16 The location stamp feature may be used in cameras that take pictures on film as
17 well as cameras that take pictures digitally.

18 The location stamp feature may be used in cameras incorporated in other
19 electronic devices, such as phones, video camcorders, or PDAs.

20

21 It is intended that the foregoing detailed description be regarded as illustrative
22 rather than limiting and that it is understood that the following claims including all
23 equivalents are intended to define the scope of the invention.

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